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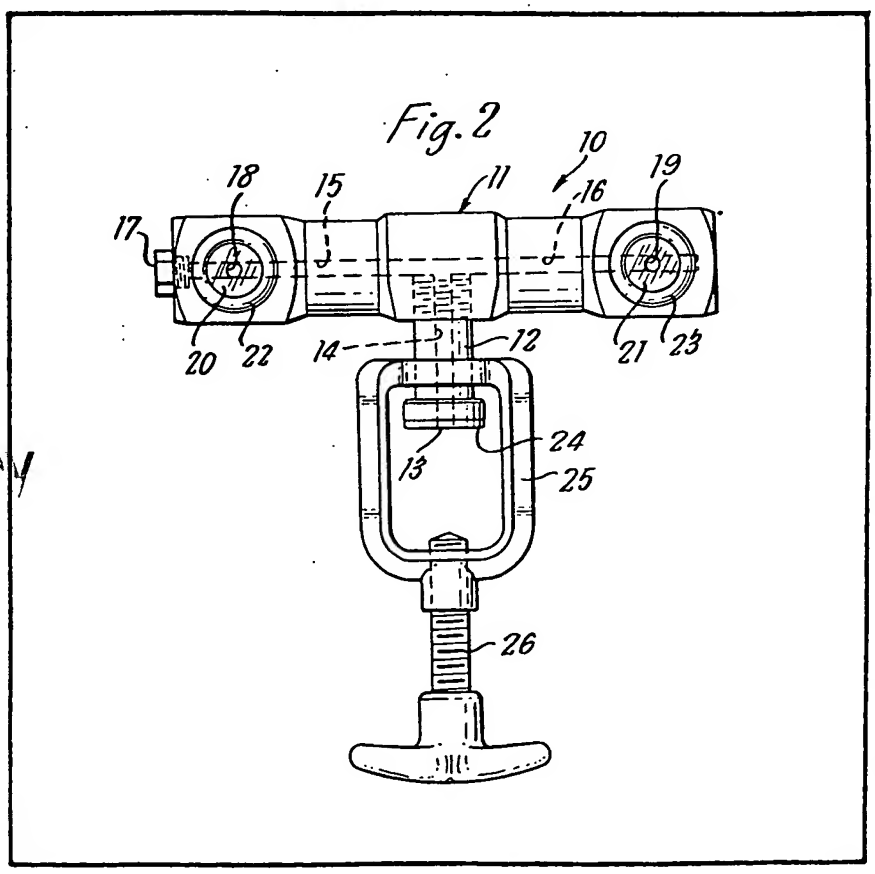
(54) Gas Cylinder Outlet Manifold

(57) An outlet manifold for a gas cylinder comprising an inlet spigot 12 having an inlet 14 communicating within the manifold with at least two outlet bores 15, 16, an outlet 18, 19 in each outlet bore adapted for connection to a gas take-off device and a bracket 25 and screw 26 associated with the inlet spigot for removably connecting the inlet to the outlet of a gas cylinder in a sealed gas tight manner.



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The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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Fig. 1

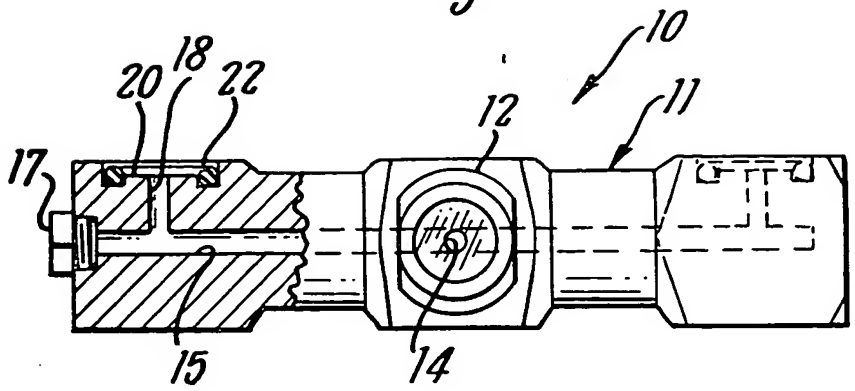


Fig. 2

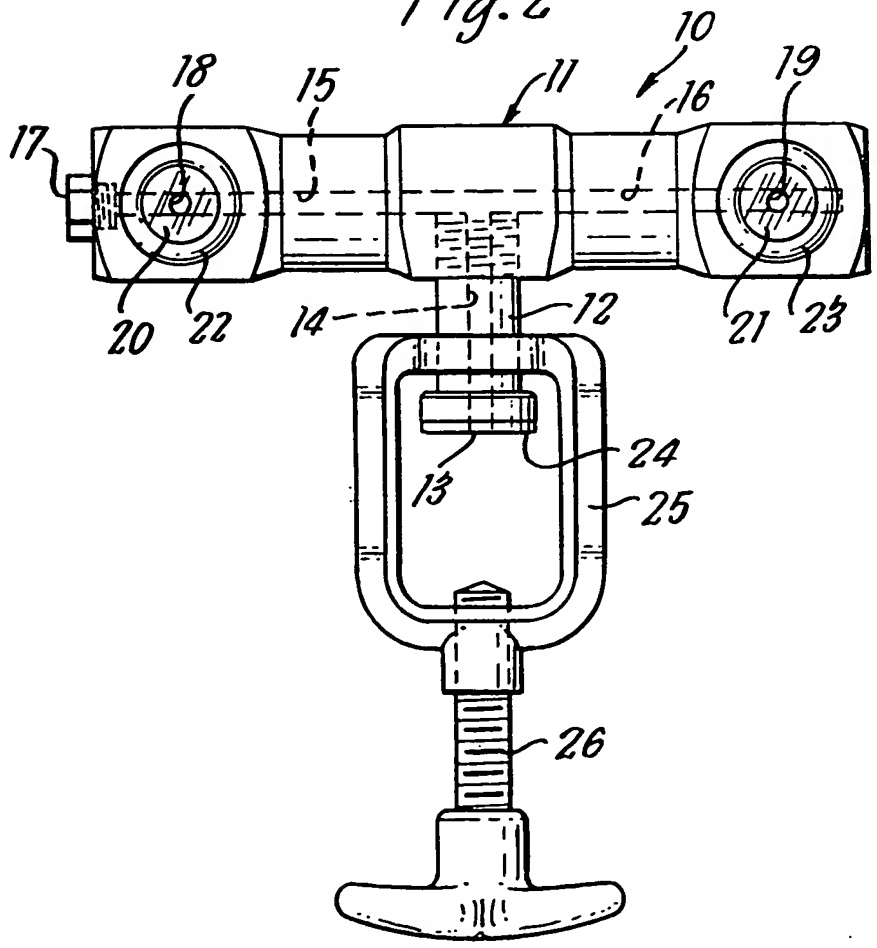


Fig. 3

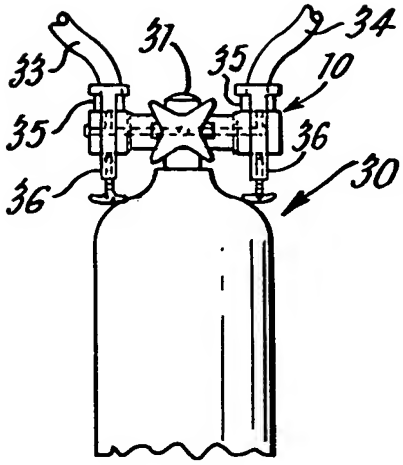


Fig. 5

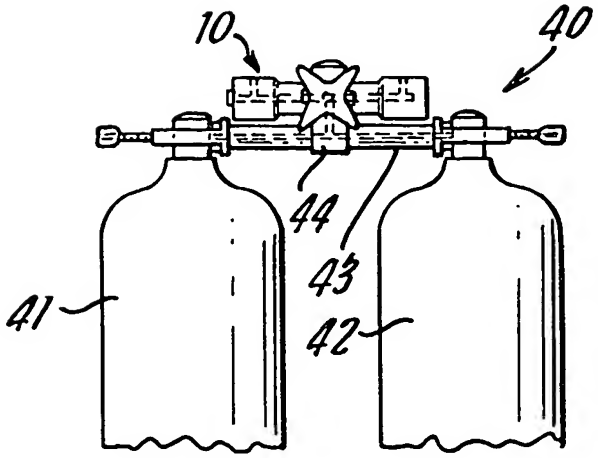


Fig. 4

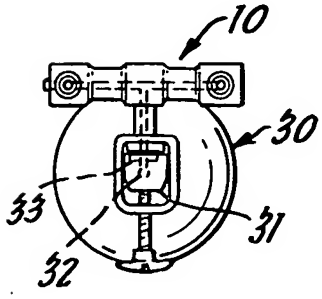
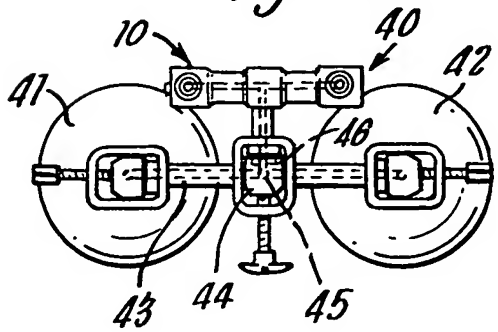


Fig. 6



SPECIFICATION

Gas Cylinder Outlet Manifold

The present invention relates to an outlet manifold for a gas cylinder of the type used for underwater diving.

An underwater diver carries one or more air cylinders on his back when he is diving and breathes through a tube which is connected to the cylinder or cylinders. The breathing tube has a valve which is normally attached to the cylinder outlet and which reduces the pressure of the air between the cylinder and the breathing tube. This valve which is known as a first stage demand valve can sometimes fail resulting in the death of a diver. It is therefore an object of the present invention to provide a manifold which will enable a diver to carry two breathing tubes each with a separate demand valve connected through the manifold to the cylinder or cylinders and selectively usable by the diver in the event of a leakage or failure occurring in one of the demand valves.

The invention therefore provides an outlet manifold for a gas cylinder comprising an inlet spigot having an inlet communicating within the manifold with at least two outlet bores, an outlet in each outlet bore adapted for connection to a gas take-off device and means associated with the inlet spigot for removably connecting the inlet to the outlet of a gas cylinder in a sealed gas-tight manner.

Preferably the means for connecting the inlet to the outlet of a gas cylinder comprises a clamping bracket and screw mounted on the inlet spigot and adapted to clamp the inlet of the spigot in gas-tight sealing engagement with the outlet of a gas cylinder.

The manifold may comprise a main body extending at right angles to the inlet spigot with the outlet bores located in the main body and the spigot positioned midway along the length of the main body.

A preferred form of the present invention will now be described with reference to the accompanying drawings, in which:—

Figure 1 is an elevation, partly in section, of an outlet manifold in accordance with the present invention;

Figure 2 is a side elevation of the outlet manifold shown in Figure 1;

Figure 3 is an elevation showing the manifold of Figures 1 and 2 and two breathing tubes attached to a single gas cylinder;

Figure 4 is a plan view of Figure 3 with the breathing tubes omitted;

Figure 5 is an elevation showing the manifold of Figures 1 and 2 attached to a twin set of cylinders; and

Figure 6 is a plan view of Figure 5.

In Figures 1 and 2 an inlet manifold for a gas cylinder is indicated generally at 10. The inlet manifold 10 comprises a main body 11 and an inlet spigot 12. Both the main body 11 and the inlet spigot 12 are preferably made from brass and may be finished in chromium plate.

The inlet spigot 12 has an inlet 13 communicating with an inlet bore 14 which extends into the main body 11 and which communicates with two outlet bores 15 and 16 respectively. The outlet bore 15 enters one end of the main body 11 and the entry end is closed by a plug 17. The outlet bore 16 terminates short of the other end of the main body 11 and is therefore closed. The outlet bores 15 and 16 communicate with outlets 18 and 19, respectively, which are surrounded by recessed valve seats 20 and 21, respectively, and O ring seals 22 and 23, respectively.

The plug 17 is provided to close the open end of the bore 15 in the manifold but the open end of the bore 15 may be used to mount a line to a pressure gauge which will provide a visual indication of the pressure in the cylinder or cylinders whenever the cylinder gas tap is on.

The inlet spigot 12 is threadedly engaged in a bore formed in the main body 11 and projects outwardly from the main body 11 generally at right angles to the main body. The inlet 13 is surrounded by a raised rib 24 and is adapted for connection to a conventional outlet on a gas cylinder.

The manifold 10 is mounted on a gas cylinder in the manner shown in Figures 3 and 4, with the aid of a clamping bracket 25 and screw 26. The bracket 25 is mounted on the spigot 12 with the end of the screw 26 facing the outlet 13. A conventional single gas cylinder of the type used in underwater diving is indicated generally at 30 in Figures 3 and 4. The cylinder 30 has an outlet spigot 31 provided with an outlet 32 surrounded by a recessed seat 33 which is adapted to receive the outlet 13 of the spigot 12 in a gas-tight sealed manner. In order to mount the manifold 10 on the outlet spigot 31, the outlet spigot 31 is inserted through the bracket 25 with the rib 24 of the inlet spigot 12 of the manifold located in the recessed seat 33 of the cylinder outlet spigot 31. The screw 26 is then tightened home to clamp the inlet spigot 12 in a gas-tight, sealed relationship against the cylinder outlet 31.

When the manifold 10 is connected to the cylinder outlet 31 two breathing tubes 33 and 34 can be connected to the manifold outlets 18 and 19 respectively. Each breathing tube has a first stage pressure reducing valve 35 at one end which is releasably connected to the manifold outlet 18 or 19 respectively with the aid of a clamping bracket 36, similar to the clamping bracket 25. When the gas tap of the cylinder is opened air under pressure is supplied from the cylinder via the manifold 10 to the first stage demand valves of both of the breathing tubes 33 and 34. The breathing tubes can therefore be selectively used by the diver in the event of a failure in either of the demand valves.

The manifold 10 can alternatively be attached to a twin set of cylinders of the type indicated generally at 40 in Figures 5 and 6. The twin set 40 comprises two similar cylinders 41 and 42

which are attached together, in a manner not shown, and which are linked by an integral manifold 43 having a single outlet spigot 44. The outlet spigot 44 is similar to the outlet spigot 31 of the cylinder 30 and has an outlet 45 surrounded by a recesses seat 46. The manifold 10 is attached to the outlet spigot 44 in the same manner as it is attached to the outlet spigot 31 and thereafter a breathing tube demand valve can be attached to both of the outlets 18 and 19.

It will be seen that the outlet manifold 10 can be attached quickly and easily to the outlet of a single gas cylinder or to the outlet of a fixed manifold on a twin set of cylinders to give two outlets for connection to two breathing tubes which can be selectively used in the event of failure in either of the breathing tube demand valves. This provides an added safety measure as well as greater flexibility in use since the manifold 10 can be quickly removed from one cylinder and attached to either another single cylinder or a pair of twin cylinders equipped with a fixed manifold having a single outlet.

It will be appreciated that the outlets 18 and 19 on the manifold 10 may be provided in any face of the manifold and that other similar changes may be made to the design and construction of the manifold without departing from the scope of the invention.

Claims

1. An outlet manifold for a gas cylinder comprising an inlet spigot having an inlet communicating within the manifold with at least two outlet bores, an outlet in each outlet bore adapted for connection to a gas take-off device and means associated with the inlet spigot for removably connecting the inlet to the outlet of a gas cylinder in a sealed gas tight manner.

2. An outlet manifold as claimed in claim 1, wherein the means for connecting the inlet to the outlet of a gas cylinder comprises a clamping bracket and screw mounted on the spigot and adapted to clamp the inlet of the spigot in gas tight sealing engagement against the outlet of a gas cylinder.

3. An outlet manifold as claimed in claim 1 or claim 2, wherein the manifold comprises a main body extending at right angles to the inlet spigot, the outlet bores being located in the main body and the spigot being positioned midway along the length of the main body.

4. An outlet manifold as claimed in any preceding claim, wherein each outlet is surrounded by a recess and an O-ring seal adapted to receive a gas demand valve spigot.

5. An outlet manifold for a gas cylinder substantially as described herein with reference to the accompanying drawings.

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